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Clinical Features of Typhoid Fever /Signs and Symptoms

Most persons infected with *Salmonella* Typhi develop high and sustained fever, headache, constipation, malaise, chills, and myalgia 2 to 5 weeks after infection. Infection is usually diagnosed by a blood culture. The illness can last from 3 to 4 weeks and infections may be severe or fatal if untreated. Typhoid fever should be treated with appropriate antimicrobial medications. More general information about *Salmonella* Typhi can be found here.

http://www.cdc.gov/salmonella/typhoidfever/

Typhoid fever is a life-threatening illness caused by the bacterium Salmonella Typhi. In the United States about 400 cases occur each year, and 75% of these are acquired while traveling internationally. Typhoid fever is still common in the developing world, where it affects about 21.5 million persons each year.

Typhoid fever can be prevented and can usually be treated with antibiotics. If you are planning to travel outside the United States, you should know about typhoid fever and what steps you can take to protect yourself.

How is typhoid fever spread?

Salmonella Typhi lives only in humans. Persons with typhoid fever carry the bacteria in their bloodstream and intestinal tract. In addition, a small number of persons, called carriers, recover from typhoid fever but continue to carry the bacteria. Both ill persons and carriers shed Salmonella Typhi in their feces (stool).

You can get typhoid fever if you eat food or drink beverages that have been handled by a person who is shedding Salmonella Typhi or if sewage contaminated with Salmonella Typhi bacteria gets into the water you use for drinking or washing food. Therefore, typhoid fever is more common in areas of the world where handwashing is less frequent and water is likely to be contaminated with sewage.

Once Salmonella Typhi bacteria are eaten or drunk, they multiply and spread into the bloodstream. The body reacts with fever and other signs and symptoms.

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Where in the world do you get typhoid fever?

Typhoid fever is common in most parts of the world except in industrialized regions such as the United States, Canada, western Europe, Australia, and Japan. Therefore, if you are traveling to the developing world, you should consider

taking precautions. Over the past 10 years, travelers from the United States to Asia, Africa, and Latin America have been especially at risk.

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How can you avoid typhoid fever?

Two basic actions can protect you from typhoid fever:

1. Avoid risky foods and drinks.
2. Get vaccinated against typhoid fever.

It may surprise you, but watching what you eat and drink when you travel is as important as being vaccinated. This is because the vaccines are not completely effective. Avoiding risky foods will also help protect you from other illnesses, including travelers' diarrhea, cholera, dysentery, and hepatitis A.

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"Boil it, cook it, peel it, or forget it"

- If you drink water, buy it bottled or bring it to a rolling boil for 1 minute before you drink it. Bottled carbonated water is safer than uncarbonated water.
- Ask for drinks without ice unless the ice is made from bottled or boiled water. Avoid popsicles and flavored ices that may have been made with contaminated water.
- Eat foods that have been thoroughly cooked and that are still hot and steaming.
- Avoid raw vegetables and fruits that cannot be peeled. Vegetables like lettuce are easily contaminated and are very hard to wash well.
- When you eat raw fruit or vegetables that can be peeled, peel them yourself. (Wash your hands with soap first.) Do not eat the peelings.
- Avoid foods and beverages from street vendors. It is difficult for food to be kept clean on the street, and many travelers get sick from food bought from street vendors.

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Getting vaccinated

If you are traveling to a country where typhoid is common, you should consider being vaccinated against typhoid. Visit a doctor or travel clinic to discuss your vaccination options.

Remember that you will need to complete your vaccination at least 1-2 weeks (dependent upon vaccine type) before you travel so that the vaccine has time to take effect. Typhoid vaccines lose effectiveness after several years; if you were vaccinated in the past, check with your doctor to see if it is time for a booster vaccination. Taking antibiotics will not prevent typhoid fever; they only help treat it.

The chart below provides basic information on typhoid vaccines that are available in the United States.

Table 1: Typhoid Vaccines Available in the United States

Vaccine Name	How Given	Number of Doses Necessary	Time Between Doses	Time immunization should be completed by (before possible exposure)	Minimum Age For Vaccination	Booster Needed Every...
Ty21a (Vivotif Berna, Swiss Serum and Vaccine Institute)	1 capsule by mouth	4	2 days	1 week	6 years	5 years
ViCPS (Typhim Vi, Pasteur Merieux)	Injection	1	N/A	2 weeks	2 years	2 years

The parenteral heat-phenol-inactivated vaccine (manufactured by Wyeth-Ayerst) has been discontinued.

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What are the signs and symptoms of typhoid fever?

Persons with typhoid fever usually have a sustained fever as high as 103° to 104° F (39° to 40° C). They may also feel weak, or have stomach pains, headache, or loss of appetite. In some cases, patients have a rash of flat, rose-colored spots. The only way to know for sure if an illness is typhoid fever is to have samples of stool or blood tested for the presence of Salmonella Typhi.

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What do you do if you think you have typhoid fever?

If you suspect you have typhoid fever, see a doctor immediately. If you are traveling in a foreign country, you can usually call the U.S. consulate for a list of recommended doctors.

You will probably be given an antibiotic to treat the disease. Three commonly prescribed antibiotics are ampicillin, trimethoprim-sulfamethoxazole, and ciprofloxacin. Persons given antibiotics usually begin to feel better within 2 to 3 days, and deaths rarely occur. However, persons who do not get treatment may continue to have fever for weeks or months, and as many as 20% may die from complications of the infection.

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Typhoid fever's danger doesn't end when symptoms disappear

Even if your symptoms seem to go away, you may still be carrying Salmonella Typhi. If so, the illness could return, or you could pass the disease to other people. In fact, if you work at a job where you handle food or care for small children, you may be barred legally from going back to work until a doctor has determined that you no longer carry any typhoid bacteria.

If you are being treated for typhoid fever, it is important to do the following:

Keep taking the prescribed antibiotics for as long as the doctor has asked you to take them.

Wash your hands carefully with soap and water after using the bathroom, and do not prepare or serve food for other people. This will lower the chance that you will pass the infection on to someone else.

Have your doctor perform a series of stool cultures to ensure that no Salmonella Typhi bacteria remain in your body.

http://www.cdc.gov/nczved/divisions/dfbmd/diseases/typhoid_fever/